

# MISCELLANEOUS CHROMOSOME NUMBER REPORTS FOR POA (POACEAE) IN NORTH AMERICA

Robert J. Soreng

Department of Botany  
National Museum of Natural History  
Smithsonian Institution  
Washington, DC 20013-7012, U.S.A.  
sorengr@si.edu

## ABSTRACT

The following 66 chromosome numbers and vouchers for 24 species of *Poa* L. are reported from Canada, México, and the U.S.A.: *P. abbreviata* subsp. *pattersonii*,  $2n = 42$ ,  $2n = 42$ ,  $2n = 42$ ; *P. alpina*,  $2n = 28+II$ ,  $2n = 32+I(2\times)$ ,  $2n = 40+I$ ,  $2n = 42$ ,  $2n = 56$ ; *P. arctica* subsp. *aperta*,  $2n = 98+I$ ; subsp. *arctica*,  $2n = 56$ ; subsp. *arctica* (longipila form),  $2n = 56-59$ ,  $2n = 80$ ,  $2n = 88$ ; *P. atropurpurea*,  $2n = 28$ ; *P. bigelovii*,  $2n = 28+I$ ; *P. cusickii* subsp. *pallida*,  $2n = 56+II$ ; *P. fendleriana* subsp. *albescens*,  $2n = 28+II$ ,  $2n = 56$ ; subsp. *fendleriana*,  $2n = 56(4\times)$ ,  $2n = 59$ ,  $2n = 58-60$ ,  $2n = 58-64$ ; subsp. *longiligula*,  $2n = 56$ ,  $2n$  ca. 56; *P. glauca* subsp. *glauca*,  $2n = 56$ ,  $2n = 56-58$ ; subsp. *rupicola*,  $2n = 48$ ,  $2n = 48-50$ ,  $2n = 54-56$ ,  $2n$  ca. 100; *P. interior*,  $2n = 42$ ; *P. laxa* subsp. *banffiana*,  $2n = 84$ ; *P. leptocoma*  $2n = 42(2\times)$ ; *P. lettermanii*,  $2n = 14$ ; *P. napensis*,  $2n = 42$ ; *P. nervosa*,  $2n = 28$ ; *P. occidentalis*,  $2n = 14(2\times)$ ,  $2n = 28$ ; *P. paucispicula*,  $2n = 42$ ; *P. piperi*,  $2n = 28$ ; *P. pratensis* subsp. *alpigena*,  $2n = 56+III$ ; *P. reflexa*,  $2n = 28(4\times)$ ; *P. secunda* subsp. *juncifolia*,  $2n = 63$ ; subsp. *secunda*,  $2n = 84-88+II$ ; *P. sierrae*,  $2n$  ca. 58; *P. strictiramea*,  $2n = 28-29$ ,  $2n = 29+II$ ; *P. supina* c.v. SUPERNOVA,  $2n = 14$ ; *P. tracyi*,  $2n = 28(5\times)$ ,  $2n = 28+I$ ; *P. unilateralis* subsp. *pachypholis*,  $2n = 42$ ; and *P. unilateralis* subsp. *unilateralis*,  $2n = 84$ .

## RESUMEN

Se citan 66 números cromosómicos y testigos de 24 especies de *Poa* L. de Canadá, México, y E.E.U.U.: *P. abbreviata* subsp. *pattersonii*,  $2n = 42$ ; *P. alpina*,  $2n = 28+II$ ,  $2n = 32+I(2\times)$ ,  $2n = 40+I$ ,  $2n = 42$ ,  $2n = 56$ ; *P. arctica* subsp. *aperta*,  $2n = 98+I$ ; subsp. *arctica*,  $2n = 56$ ; subsp. *arctica* (forma longipila),  $2n = 56-59$ ,  $2n = 80$ ,  $2n = 88$ ; *P. atropurpurea*,  $2n = 28$ ; *P. bigelovii*,  $2n = 28+I$ ; *P. cusickii* subsp. *pallida*,  $2n = 56+II$ ; *P. fendleriana* subsp. *albescens*,  $2n = 28+II$ ,  $2n = 56$ ; subsp. *fendleriana*,  $2n = 56(4\times)$ ,  $2n = 59$ ,  $2n = 58-60$ ,  $2n = 58-64$ ; subsp. *longiligula*,  $2n = 56$ ,  $2n$  ca. 56; *P. glauca* subsp. *glauca*,  $2n = 56$ ,  $2n = 56-58$ ; subsp. *rupicola*,  $2n = 48$ ,  $2n = 48-50$ ,  $2n = 54-56$ ,  $2n$  ca. 100; *P. interior*,  $2n = 42$ ; *P. laxa* subsp. *banffiana*,  $2n = 84$ ; *P. leptocoma*  $2n = 42(2\times)$ ; *P. lettermanii*,  $2n = 14$ ; *P. napensis*,  $2n = 42$ ; *P. nervosa*,  $2n = 28$ ; *P. occidentalis*,  $2n = 14(2\times)$ ; *P. paucispicula*,  $2n = 42$ ; *P. piperi*,  $2n = 28$ ; *P. pratensis* subsp. *alpigena*,  $2n = 56+III$ ; *P. reflexa*,  $2n = 28(4\times)$ ; *P. secunda* subsp. *juncifolia*,  $2n = 63$ ; subsp. *secunda*,  $2n = 84-88+II$ ; *P. sierrae*,  $2n$  ca. 58; *P. strictiramea*,  $2n = 28-29$ ,  $2n = 29+II$ ; *P. supina* c.v. SUPERNOVA,  $2n = 14$ ; *P. tracyi*,  $2n = 28(5\times)$ ,  $2n = 28+I$ ; *P. unilateralis* subsp. *pachypholis*,  $2n = 42$ ; y *P. unilateralis* subsp. *unilateralis*,  $2n = 84$ .

The Flora of North America North of México (Morin et al. 1993) editorial policy requires that chromosome numbers be independently published prior to being reported in the treatments. Therefore, I am reporting a series of chromosome counts here for *Poa* that are unreported or only mentioned with partial voucher

TABLE 1. Voucher information for chromosome counts in the genus *Poa* that are new or mentioned with no or only partial voucher information in Soreng (1985, 1990, 1991a, 1991b, 1993, 1998) and Soreng and Hatch (1983). RJS = R.J. Soreng, RWS = R.W. Spellenberg.

TAXON	COUNTY & STATE	SPECIFIC LOCATION, DATE, COLLECTION NO. & HERBARIUM	CHROMOSOME NO. (2n), AND NOTES
<i>Poa abbreviata</i> subsp. <i>pattersonii</i> (Vasey) A. Löve, D. Löve & B.M. Kapoor	U.S.A. Colorado:	Clear Cr. Co.: Rocky Mts., Mt. Evans top, SSE of Georgetown ca. 13 km, 3 Aug 1984, RJS, R. Bayer, M. Dunford & G.L. Stebbins 2555 (US)	<b>42</b> (Soreng 1991b, with partial voucher) information
	Colorado:	Summit/Park Co. boundary, Rocky Mts., Tenmile Range, North Star Mt., Hoosier Ridge W of Hoosier Pass, 2 Aug 1984, RJS, R. Bayer, M. Dunford & G.L. Stebbins 2548 (US)	<b>42</b> (Soreng 1991b, with partial voucher information)
	Montana:	Deer Lodge Co.: Anaconda-Pintlar Wilderness, Mt. Tiny, above Storm Lk., 6 Aug 1980, RJS & RWS 1165-2 (US)	<i>n</i> = <b>21</b> , from pollen division (Soreng 1991b, with partial voucher information)
<i>Poa alpina</i> L.	CANADA. Alberta:	Banff N.P., ca. 100 km N of Banff on hwy 93, E slopes of Mt. Peyto, S of Peyto Lk., N of Bow Lk., 28 Jul 1980, RJS & RWS 1018 (US)	<b>42</b> (new)
	Alberta:	Plateau Mt., between Mt. Livingston and Mt. Burke, ca. 67 km due N of Colman, 2 Aug 1980, RJS & RWS 1105 (US)	<b>56</b> (new)
	U.S.A. Colorado:	Saguache Co.: San Luis Mts., N slope of Baldy Chato, off Big Meadow Rd. FR 790, 17 Aug 1980, RJS & RWS 1406-a (US)	<b>28+II</b> (new)
	Colorado:	Saguache Co.: San Luis Mts., N slope of Baldy Chato, off Big Meadow Rd. FR 790, 17 Aug 1980, RJS & RWS 1406-b (US)	<b>32+I</b> (new)
	Wyoming:	Park Co.: Beartooth Pass, E summit, 8 Aug 1980, RJS & RWS 1213-5 (US)	<b>40+I</b> (new)
	Wyoming:	Sublett Co.: Little Sheep Mt., NW of N end of Green Lakes ca. 6 km, 10 Aug 1980, RJS & RWS 1290 (US)	<b>32+I</b> (new)
	U.S.A. Colorado:	Saguache Co.: San Luis Mts., N slope of Baldy Chato, off Big Meadow Rd., FR 790, 17 Aug 1980, RJS & RWS 1412-a (US)	<b>99</b> (Soreng 1985, without voucher)
<i>Poa arctica</i> subsp. <i>aperta</i> (Scribn. & Merr.) Soreng			

TABLE 1. (continued)

Taxon	County & State	Specific location, date, collection no. & herbarium	Chromosome no. ( $2n$ ), and notes
<i>Poa arctica</i> R.Br. subsp. <i>arctica</i>	CANADA. Alberta:	Kananaskis Prov.P, at Kananaskis Summit (Highwood Pass), near Mt. Arethusa ca. 67 km S of Seebe and Hwy 1, on Hwy 40, on W side, 31 Jul 1980, <i>RJS &amp; RWS 1094</i> (US)	<b>56</b> (new)
	U.S.A. Colorado:	Pitkin Co. (W of Lake Co. line?), Rocky Mts., Sawatch Range, Independence Pass, 15 Aug 1980, <i>RJS &amp; RWS 1391</i> (US)	<b>88</b> (new)
	Montana:	Deer Lodge Co.: Anaconda-Pintlar Wilderness, Mt. Tiny, above Storm Lk., 6 Aug 1980, <i>RJS &amp; RWS 1180</i> (US)	<b>80</b> (new)
	Montana:	Glacier Co.: Glacier N.P., Pigan Pass, 4 Aug 1980, <i>RJS &amp; RWS 1142</i> (US)	<b>56-59</b> (new)
<i>Poa atropurpurea</i> Scribn.	U.S.A. California:	San Bernardino Co.: Baldwin Lake, 1985, <i>RJS 2632</i> (US)	<b>28</b> (Soreng 1993, without voucher)
<i>Poa bigelovii</i> Vasey & Scribn.	U.S.A. New Mexico:	Lincoln Co.: White Mts., NE of Sierra Blanca, below Monjeau L.O., 16 Jun 1981, <i>RJS 1584t</i> (US)	<b>28+I</b> (Soreng 1985, without voucher)
<i>Poa cusickii</i> subsp. <i>pallida</i> Soreng	U.S.A. Montana:	Park Co.: NE of Gardner 10 km, E of Jardine, Jun 08 1984, <i>RJS 2453-a</i> (US)	<b>56+II</b> (Soreng 1991a, with voucher, but location incomplete and number erroneously reported as <i>RJS 2456</i> )
<i>Poa fendleriana</i> subsp. <i>albescens</i> (Hitchc.) Soreng	MEXICO. Chihuahua: Sonora:	Sierra Madre Occidental, Creel, near air strip, 15 Apr 1984, <i>RJS &amp; RWS 2309</i> (US) 5 km NW of Cananea on microondas road N from road to Sonora, 19 Mar 1982, <i>RJS &amp; RWS 1780-5</i> (US)	<b>56</b> (new) <b>28+II</b> , with inversion bridge & fragments (Soreng 1985, without voucher)
<i>Poa fendleriana</i> (Steud.) Vasey subsp. <i>fendleriana</i>	U.S.A. New Mexico: Mexico:	Catron Co.: Sheridan Gulch, 21 May 1983, <i>RJS &amp; D. Ward 2125</i> (US) Dona Ana Co.: Organ Mts., W side, below and E of Baylor Pk., 10 Feb 1984, <i>RJS &amp; R. Neilson 2190-b</i> (US)	<b>56</b> , with multivalents (new) <b>56</b> (new)

TABLE 1. (continued)

Taxon	County & State	Specific location, date, collection no. & herbarium	Chromosome no. ( $2n$ ), and notes
	Mexico:	Grant Co.: Black Range, 19 km NW of Mimbres, D. Ward 81-04 (NMC)	<b>58-64</b> (new)
	Mexico:	Lincoln Co.: White Mts., Montgomery Biological Research Station, 8 km N of Ruidoso, 18 Apr 1981, RJS 1580 (US)	<b>56</b> (new)
	Mexico:	Sandoval Co.: Sandia Mts., W base, Juan Tabo Picnic Area, NE of Albuquerque, 6 Jun 1983, RJS & RWS 2172 (US)	<b>58-60</b> (new)
	Mexico:	Socorro Co.: San Mateo Mts., 21 Mar 1984, RJS 2303 [no voucher]	<b>56</b> (new)
	MEXICO.	Sierra Madre Occidental, 7 km E of Tomachic, 14 Apr 1984, RJS 2306 (US)	$n = 28+1$ , mitotic, pistillate plant (new)
<i>Poa fendleriana</i> subsp. <i>longiligula</i> (Scribn. & T.A. Williams) Soreng	Chihuahua:	Apache Co.: Chuska Mts., 6.7 km NE of Lukachukai, on BIA-13, 9 Jun 1983, RJS & RWS 2177 (US)	<b>56</b> (new)
	U.S.A.		
	Arizona:		
	Wyoming:	Park Co.: Mammoth Hot Springs, 08 Jun 1984, RJS 2454 (US)	$n \approx 28$ , mitotic (new)
<i>Poa glauca</i> Vahl subsp. <i>glauca</i>	CANADA.	Plateau Mt., between Mt. Livingston and Mt. Burke, 67 km due N of Colman, 1 Aug 1980, RJS & RWS 1098-3 (US)	56-58, meiosis irregular (new)
	Alberta:	Taos Co.: Wheeler Peak, ridge 3.3 km N of peak, 0.4 km S of Frazer Mt., 19 Aug 1980, RJS & RWS 1454-7 (US)	<b>56</b> , multivalents and lagers common (new)
	U.S.A. New Mexico:	Pitkin Co.: Rocky Mts., Sawatch Range, Independence Pass, 15 Aug 1980, RJS & RWS 1372-18 (US)	Ca. <b>100</b> (new)
<i>Poa glauca</i> subsp. <i>rupicola</i> (Nash) W.A. Weber	U.S.A.	Park Co.: Clay Butte Look-Out., ca. 2 km W of Beartooth Lk., 8 Aug 1980, RJS & RWS 1221-2 (US)	<b>54-56</b> , multivalents (new)
	Colorado:	dito, RJS & RWS 1221-5 (US)	
	Wyoming:	Sublett Co.: Top of Little Sheep Mt., NW of N end of Green Lakes ca. 6.25 km, 10 Aug 1980, RJS & RWS 1299-6 (US)	<b>48-50</b> , multivalents (new)
	Wyoming:	Saguache Co.: San Luis Mts., N slope of Baldy Chato, off Big Meadow Rd. FR 790, 17 Aug 1980, RJS & RWS 1422-a-3 (US)	<b>48</b> (new)
<i>Poa interior</i> Rydb.	U.S.A.		
	Colorado:	Saguache Co.: San Luis Mts., N slope of Baldy Chato, off Big Meadow Rd. FR 790, 17 Aug 1980, RJS & RWS 1422-a-3 (US)	<b>42</b> (new)

TABLE 1. (continued)

TAXON	COUNTY & STATE	SPECIFIC LOCATION, DATE, COLLECTION NO. & HERBARIUM	CHROMOSOME NO. (2n), AND NOTES
<i>Poa laxa</i> Haenke subsp. <i>banifiana</i> Soreng	U.S.A. Montana:	Glacier Co.: Glacier N.P., Pigarn Pass, 4 Aug 1980, RJS & RWS 1137 (US)	<b>84</b> (Soreng 1991b, with partial voucher information)
<i>Poa leptocoma</i> Trin.	U.S.A. Montana: Utah:	Glacier Co.: Glacier N. P., Pigarn Pass, 4 Aug 1980, RJS & RWS 1148-4 (US) Summit Co.: Mt. Murdock E of Bald Mt. Pass, Hwy 150, 12 Aug 1980, RJS & RWS 1347-2 (US)	<b>42</b> (Soreng & Hatch 1983) <b>42</b> (new)
<i>Poa lettermanii</i> Vasey	CANADA or U.S.A.:		<b>14</b> (A. Löve, pers. com., letter ca. 1982, reported by Soreng 1991a, voucher unknown)
<i>Poa napensis</i> Beetle	U.S.A. California:	Napa Co.: Calistoga, S end of landing strip W of Lincoln Ave., 27 May 1986, RJS 2926 (US)	<b>42</b> (Soreng 1991a, with partial voucher and location)
<i>Poa nervosa</i> (Hook.) Vasey s.str. (excluding <i>Poa wheeleri</i> Vasey)	U.S.A. Oregon:	Marion Co.: Silver Cr. Falls S.P., Winter Falls, 6 Jun 1986, RJS 2960 (US)	<b>28</b> (new)
<i>Poa occidentalis</i> Vasey	U.S.A. New Mexico: New Mexico: New Mexico:	Rio Arriba Co.: SW of Coyote, Puerco C.G., ca. 33 km NW of Los Alamos, 15 Aug 1978, RJS & S.L. Hatch 48 (US) Otero Co.: Sacramento Mts., ca. 8.3 km ENE of Cloudcroft S of NM-244 on CR-7, Dec early 1978, RJS 123b (US) Otero Co.: Cloudcroft, S.L. Hatch-2222 (TAES)	<b>14</b> (Soreng & Hatch 1983) <b>28</b> (Soreng & Hatch 1983) <b>14</b> (Soreng & Hatch 1983, count by S.L. Hatch)
<i>Poa paucispicula</i> Scribn. & Merr.	CANADA. Alberta:	Banff N.P., ca. 100 km N of Banff on hwy 93, E slopes of Mt. Peyto, S of Peyto Lk., N of Bow Lk., 28 Jul 1980, RJS & RWS 1016 (US)	<b>42</b> (Soreng & Hatch 1983, reported as <i>Poa leptocoma</i> )
<i>Poa piperi</i> Hitchc.	U.S.A. California:	Del Norte Co.: Off hwy 199 0.6 km on Patrick Cr. Rd above the Middle Fork of the Smith Rv., 2 Jun 1986, RJS 2950 (US)	<b>28</b> (Soreng 1990, 1993, without voucher)
<i>Poa pratensis</i> L. subsp. <i>alpigena</i> (Lindm.) Hiltanen	U.S.A. Alaska:	(US) Nome, Jul 1983, G.L. Stebbins A-3107! (US)	<b>56+III</b> , original det. as <i>Poa arctica</i> (new)

TABLE 1. (continued)

Taxon	County & State	Specific location, date, collection no. & herbarium	Chromosome no. ( $2n$ ), and notes
<i>Poa reflexa</i> Vasey & Scribn.	U.S.A. New Mexico:	Taos Co.: Wheeler Pk. La Cal Basin, ca. 1.7 km NNW of peak, 19 Aug 1980, RJS & RWS 1478-4 (US)	<b>28</b> (Soreng & Hatch 1983)
	Utah:	Summit Co.: Mt. Murdock E of Bald Mt. Pass, Hwy 150, 11 Aug 1980, RJS & RWS 1336 (US)	<b>28</b> (Soreng & Hatch 1983)
	Wyoming:	Park Co.: Clay Butte Look Out., ca. 2 km W of Beartooth Lk, 8 Aug 1980, RJS & RWS 1227 (US)	<b>28</b> (new)
	Wyoming:	Sublett Co.: S side of Little Sheep Mt., NW of Green Lakes ca. 5 km, 10 Aug 1980, RJS & RWS 1260-3 (US)	<b>28</b> (Soreng & Hatch 1983)
<i>Poa secunda</i> subsp. <i>juncifolia</i> (Scribn.) Soreng	U.S.A. Nevada:	Lander Co.: Toiyabe Range, E of Austin ca. 13 km on Hwy 50, 1 Jul 1980, RJS 821 (US)	<b>63</b> (Soreng 1991b, with partial voucher information)
<i>Poa secunda</i> J. Presl subsp. <i>secunda</i>	U.S.A. Montana:	Glacier Co.: Glacier N.P., Siyeh Pass Trail, 4 Aug 1980, RJS & RWS 1135 (US)	<b>84-88+II</b> (Soreng 1991b, with partial voucher information) ca. <b>58</b> (new)
<i>Poa sierrae</i> T. Howell	U.S.A. California:	Eldorado Co.: Deep Canyon, N. Fork of American River, E of Colfax off hwy 80 ca. 2 m, ca. 0.8 km NE of river crossing of Iowa Hill-Colfax Rd., 30 May 1986, RJS & G.L. Stebbins 2931 (US)	
<i>Poa strictiramea</i> Hitchc.	MEXICO. Chihuahua:	Sierra Madre Occidental, W of San Jose Babicora, C. El Diablo Pass, 2 km W on road to Madera, 13 Apr 1984, RJS & RWS 2304-a (US)	$n = 14+I$ , mitosis (Soreng 1991a, with voucher and partial location)
	Chihuahua:	dito, RJS & RWS 2304-b (US)	$n = 14-15+II$ , mitosis (new)
<i>Poa supina</i> Schrad. cv. SUPERNova	U.S.A. Maryland:	Cultivated from commercial seed, 2000, RJS & J. Cayouette 5950-b (US)	$n = 7$ , mitosis (J. Cayouette, unreported)
<i>Poa tracyi</i> Vasey	U.S.A. New Mexico:	Bernalillo Co.: Sandia Crest, rim N of Tram, 16 Jul 1981, RJS & K. Gadzia 1642 (US)	<b>28</b> (Soreng & Hatch 1983)
	New Mexico:	Colfax Co.: WNW of Raton, Raton City Park, 16 Aug 1978, RJS & S.L. Hatch 64 (US)	<b>28</b> (Soreng & Hatch 1983)

TABLE 1. (continued)

Taxon	County & State	Specific location, date, collection no. & herbarium	Chromosome no. ( $2n$ ), and notes
	New Mexico:	Colfax Co.: NW of Raton, Raton City Park, 31 May 1979, <i>RJS</i> 266 (US)	<b>28</b> (Soreng & Hatch 1983)
	New Mexico:	Colfax Co.: N of Raton, John Mayer's Ranch, down canyon from Raton Pass on side of Bartlet Mesa, E side of US-25, 31 May 1979, <i>RJS</i> 267 (US)	<b>28</b> (Soreng & Hatch 1983)
	New Mexico:	Colfax Co.: Raton Ranch, NW of Raton ca. 7.5 km, 3 Jun 1979, <i>RJS</i> 272 (US)	<b>28</b> (Soreng & Hatch 1983)
	New Mexico:	Colfax Co.: Raton Ranch, NW of Raton ca. 12 km, 3 Jun 1979, <i>RJS</i> 274 (US)	<b>28</b> (Soreng & Hatch 1983)
	New Mexico:	Lincoln Co. Sierra Blanca, circ below the Peak, 10 Jul 1982, <i>RJS &amp; RWS</i> 2007 (US)	<b>28+I</b> (new)
<i>Poa unilateralis</i> subsp. <i>pachypholis</i> (Piper) Soreng	U.S.A. Washington:	Pacific Co.: Ilwaco, <i>RWS &amp; D. Southerland</i> 1522A (NMC)	<b>42</b> , R.W. Spellenberg count (Soreng 1998, with partial voucher information)
<i>Poa unilateralis</i> Scribn. subsp. <i>unilateralis</i>	U.S.A. Oregon:	Curry Co.: 3.3 km S of Gold Beach on serpentine road cut, Buena Vista Waysides, 300 ft above the ocean, 22 Jun 1949, <i>J. Clausen</i> 2151 (CAS)	<b>84</b> , as <i>Poa unilateralis</i> , J. Clausen unpublished (Soreng 1991a, with voucher but no location)

information in Soreng (1985, 1990, 1991a, 1991b, 1993, 1998) and Soreng and Hatch (1983). Table 1 includes full specimen citations and herbaria (acronyms following Holmgren et al. 1990) where the vouchers are deposited for all of my previous and new reports. My own counts were done between 1978 and 1988. Methods for the chromosome preparations were given in Soreng and Hatch (1983).

In addition, vouchers and/or notes of a few counts done by other botanists/authors that have not been reported previously are included. Jacques Cayouette provided his new chromosome count of *P. supina* from the recently introduced (in North America) cultivar SUPERNOVA. The count reported in Soreng (1991a) for *P. lettermanii* was mentioned to me in a letter by A. Löve, ca. 1982. This report is interesting as it raises to three the number of diploid species in the New World (the others are *P. occidentalis* and *P. pseudoabbreviata*). Verification of the count for *P. lettermanii* is needed since I only have the correspondence record. I found an unpublished report for *P. unilateralis* subsp. *unilateralis* of  $2n = 84$  on a herbarium specimen at CAS, the count likely done by the collector of the specimen, geneticist Jens Clausen. Myers (1947) reported a count by Stebbins of  $2n = 42$ , presumably for the typical subspecies (as *P. unilateralis* subsp. *pachypholis* is rather local, more recently published, and restricted to the coast of NW Oregon and adjacent Washington). Richard W. Spellenberg made a count of  $2n = 42$  for *P. unilateralis* subsp. *pachypholis*.

Although emphasis has switched away from cytogenetic comparisons of species to DNA analyses in *Poa* (Gillespie & Soreng 2005; Soreng 1990), it is important to have an understanding of the cytogenetic history of taxa in order to interpret results of other analyses, and to be able to locate vouchers and know where they were collected. Of the 66 counts listed in Table 1, 34 are unreported elsewhere. The base chromosome number in the genus *Poa* is  $x = 7$ , and the counts reported here generally correspond to multiples of seven, but unbalanced sets of chromosomes were frequently encountered. Roman numerals given after numbers (i.e.;  $2n = 28+II$ ) represent unpaired chromosomes in the metaphase or anaphase of meiosis, or unbalanced numbers in mitosis or later stages of meiosis. Although supernumerary or B chromosomes have been reported frequently in *Poa*, no attempt was made to distinguish unbalanced chromatin of this type from fragments resulting from irregular meiosis, etc. Most of the counts reported here conform to numbers reported by other authors for the same taxa. *Poa sierrae* ( $2n = 28$ ) is the only taxon reported here for the first time. In taxa with previously reported counts, other than my own, and disregarding the extra chromatin, the only the previously unrecorded numbers in any taxon reported here are:  $2n = 56$  in *P. fendleriana* subsp. *albescens*, and  $2n = 48, 48-50, 54-56$ , and ca. 100 in *P. glauca* subsp. *rupicola*. This work continues to show the pattern in *Poa* of few diploid taxa, numerous taxa with low, fairly stable tetra- and hexaploid numbers, other taxa with higher euploid series, and taxa

with euploid peaks connected by dysploid series of numbers (Hiesey & Nobs 1982; Stebbins 1950).

#### ACKNOWLEDGMENTS

Most of these chromosome counts were done during my Masters degree research under Stephen L. Hatch and then Kelly W. Allred, and PhD research under Richard W. Spellenberg, at New Mexico State University. My appreciation is extended to these advisors, to Gerrit Davidse and Lynn J. Gillespie for their helpful reviews of the manuscript, and to Jacques Cayouette for allowing me to report his new chromosome count.

#### REFERENCES

- GILLESPIE, L.J. and R.J. SORENG. 2005. A phylogenetic analysis of the bluegrass genus *Poa* based on cpDNA restriction site data. *Syst. Bot.* 30:84–105.
- HIESEY, W.M. and M.A. NOBS. 1982. Experimental studies on the nature of species VI: Inter-specific hybrid derivatives between facultatively apomictic species of bluegrasses and their responses to contrasting environments. *Publications of the Carnegie Institute of Washington*. Vol. 636.
- HOLMGREN, P.K., N.H. HOLMGREN, and L.C. BARNETT. 1990. *Index herbariorum. Part I: the herbaria of the world*. New York Botanical Garden, Bronx.
- MORIN, N.R. et al. (eds.). 1993 forward. *Flora of North America north of Mexico*. Oxford University Press, New York.
- MYERS, W.M. 1947. Cytology and genetics of forage grasses. *Bot. Rev.* 13:319–421.
- SORENG, R.J. 1985. *Poa* L. in New Mexico, with a key to middle and southern Rocky Mountain species (Poaceae). *Great Basin Naturalist* 45:395–422.
- SORENG, R.J. 1990. Chloroplast DNA phylogenetics and biogeography in a reticulating group: study in *Poa* (Poaceae). *Amer. J. Bot.* 77:1383–1400.
- SORENG, R.J. 1991a. Systematics of the *Poa* L. group "Epiles" (Poaceae). *Syst. Bot.* 16:507–528.
- SORENG, R.J. 1991b. Notes on new subspecific taxa and hybrids in North American *Poa* (Poaceae). *Phytologia* 71:390–413.
- SORENG, R.J. 1993. *Poa* L. In: J.C. Hickman, ed. *The Jepson manual: higher plants of California*. University of California Press, Berkeley. Pp. 1284–1291.
- SORENG, R.J. 1998. An infrageneric classification for *Poa* in North America, and other notes on sections, species, and subspecies of *Poa*, *Puccinellia*, and *Disantherium* (Poaceae: Poae). *Novon* 8:187–202.
- SORENG, R.J. and S.L. HATCH. 1983. A comparison of *Poa tracyi* and *Poa occidentalis*. *Sida* 10: 123–141.
- STEBBINS, G.L. 1950. *Variation and evolution in plants*. Columbia University Press, New York.